

Changkat Changi Secondary School
Physics Department

Unit 6: Energy, work and power

Name: _____ Class: _____ Date: _____

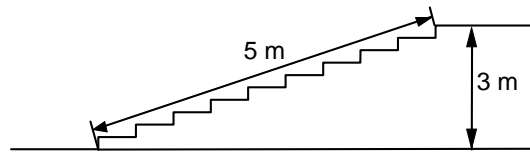
Worksheet 6.3

Section A—Multiple Choice Questions (7 marks)

For all the questions below, use $g = 10\text{N/kg}$

1. Which quantity is calculated by multiplying magnitude of force by distance moved?
A acceleration B power
C moment D work ()
2. Mechanical work is done when a
A girl pushes against the wall of a house.
B weight-lifter holds the weights stationary above him.
C soldier stands at attention on the parade grounds.
D man pushes a pram with a baby. ()
3. A box is pushed 3 m along the floor with a resultant force of 70 N.
What is the work done?
A 10 J B 90 J C 210 J D 300 J ()
4. When a mass of 0.09 kg is raised vertically through a distance of 10 metres, the work done in lifting is
A 0.9 J B 9 J C 90 J D 900 J ()
5. What is power?
A energy needed to move an object
B force x the distance moved by the object
C work done on the object x its speed
D work done or energy transformed per unit time ()
6. A crane lifts a mass of 600 kg through a vertical height of 10 m in 24 s. What is the minimum power required?
A 60 W
B 250 W
C 2500 W
D 6000 W ()

7. A boy weighing 600 N takes 4 s to run up the stairs shown in the diagram.
What is his average power?

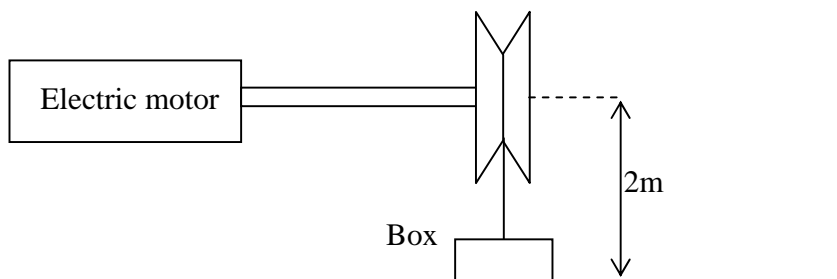


- A 450 W
- B 600 W
- C 750 W
- D 4500 W

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Section B Structured Questions (9 marks)

8. The electric motor in the figure below completely lifts the box in 5 s, at a steady speed.



If the box weighs 100N, calculate

(i) the work done by the motor

(ii) the power of the motor

9. An officer worker of mass 60 kg travels from first floor to the fifth floor in an elevator of mass 1000kg. The distance between each floor is 4m.

(a) Calculate the work done in moving the elevator (lift) and the office worker from the first to the fifth floor. (Take g to be 10 N/kg)

(b) What is the power required to move the elevator and the office worker in (i) if it takes 40s to complete the journey?

(c) Explain why the motor will use more power to move the elevator than you have shown in (ii).
